



October 08, 2021

Jenny Raitt, Director, Department of Planning and Community Development

Town of Arlington
50 Pleasant Street
Arlington, MA 02476

Re: Thorndike Place - Arlington, MA
Peer Review - Flood Mitigation Memo

Dear Ms. Raitt:

At the request of the Board, BETA Group, Inc. (BETA) has reviewed the memorandum entitled *Thorndike Place - Flooding Mitigation Measures*, prepared by John Hession, P.E., dated October 4, 2021. The memorandum was prepared at the request of Patrick Hanlon and summarizes stormwater flooding and mitigation measures related to the project. The memorandum discusses three (3) potential sources of stormwater flooding:

1. Localized Flooding
2. Stream Flooding
3. Groundwater Flooding

The memo summarizes the following:

Localized flooding is related to surface runoff that is directed to the roadway drainage system in Dorothy Road. The existing catch basins in the vicinity of the proposed development are at the low point of Dorothy Road and much of the neighborhood. The catch basins connect to a 12-inch diameter pipe that runs through the Thorndike Place property within a town easement and discharges to the southeast at Route 2. The memo notes that localized flooding may be due to insufficient capacity within the drainage system including the 12-inch discharge pipe.

Stream flooding is related to flow from Alewife Brook. The FEMA designated 100-year flood elevation on the site is elevation 6.8. The project will fill certain portions of the floodplain. As required, compensatory storage must be provided to mitigate for the volume of flood storage lost. As currently designed, the project proposes to provide compensatory flood storage at a ratio of 2:1 as compared to the volume of filling. This is consistent with local Arlington Wetlands Regulations.

Groundwater on site is estimated to be at elevation 3.0 based on test pits conducted in November 2020. The project design includes a garage for the senior living building and basements for the duplex units. The garage elevation is proposed at elevation 6.0 and the duplex basements at elevation 3.0. Ambrose Donovan, PE, LSP of McPhail Associates presented at the June 10, 2021 ZBA public hearing that the proposed development, including the projection of building foundations below groundwater, would have no impact on the groundwater table in the vicinity of the project. The proposed stormwater infiltration system provides less than 4 feet of separation to groundwater. The Applicant provided a groundwater

mounding analysis as required by the Massachusetts Stormwater Standards. The analysis indicates that the lateral extent of groundwater mounding related to the infiltration system would not extend beyond the property but likely would impact the foundations of four duplex units and the senior living building. The Applicant has agreed to account for the impacts of the groundwater mounding in the design of the foundations.

We offer the following comments on the memorandum:

During the design and peer review process, the proposed development has been revised so that the site generated stormwater is managed on-site and there is no increase in peak runoff rate or volume to Dorothy Road as a result of the development for storms up to and including the 100 year storm event. As requested, the Applicant modeled the stormwater using NOAA 14+ rainfall data to account for potential climate change impacts. Since there is no increase in runoff from the site, we concur that the development as designed would not exacerbate the conditions that cause localized flooding in the neighborhood.

The project is providing compensatory flood storage at a 2:1 ratio as required by Arlington's local wetlands regulations. Given the size of the Alewife Brook watershed and floodplain it is unlikely that this would result in a lower flood elevation, but we concur that it would mitigate impacts related to fill within the floodplain.

Groundwater impacts resulting from the proposed stormwater infiltration system are contained on-site based on the completed groundwater mounding analysis. The Applicant has agreed to conduct additional test pits to confirm the groundwater elevation. Based on current groundwater data, impacts to the groundwater table would not impact off site properties. However, if new data indicates a higher groundwater elevation, the design will need to be reviewed and potentially revised.

The project design has been revised during the review process such that there is no increase in offsite runoff, required compensatory flood storage is provided and groundwater impacts have been mitigated. We concur with the narrative and conclusions presented in the *Thorndike Place – Flooding Mitigation Measures* memorandum subject to any new groundwater data. While the proposed project would not be expected to exacerbate existing flooding conditions, it should not be construed that it will lessen impacts.

If you have questions about any of these comments, please feel free to contact us.

Very truly yours,
BETA Group, Inc.



William P. McGrath, P.E.
Senior Associate

cc: Christian Klein, Chair ZBA
Patrick Hanlon, ZBA
Kelly Lynema, Town of Arlington
Paul Haverty, ZBA Counsel
Susan Chapnick, Chairperson – Arlington Conservation Commission